OCEANS & COASTAL ACTIVITIES OF DEPARTMENT OF INTERIOR AGENCIES

Conserving and Restoring Coastal Habitat

- The National Wildlife Refuge System's 169 ocean and Great Lakes refuges total over 30,000 miles of shoreline and encompass approximately 20 million acres. Individual Refuges work on active habitat restoration and enhancement projects in Alaska, the continental U.S., the Caribbean, Hawaii and the remote Pacific Islands. Habitat projects include restoration and mitigation of previous development, removing extensive mono-culture stands of exotic invasive plant species in coastal areas, and removing grounded and abandoned vessels from rocky shorelines, estuaries, coral reefs, and lagoons.

- The U.S. Fish and Wildlife Service (FWS) Fisheries Program has been actively involved in funding the removal of old dams and stream barriers to allow for the passage of indigenous migratory fish species in tributaries of the Chesapeake Bay, including the Susquehanna, Potomac and Rappahannock Rivers. Species whose habitat has been expanded by removing or bypassing barriers include striped bass, American shad, blueback herring, hickory shad, alewife and American eel.

- The FWS Coastal Program is a non-regulatory, voluntary, community and landowner based program which provides technical and financial assistance in identifying and restoring habitats of importance to the Service's conservation mission in 16 high priority coastal areas. The Coastal Program works directly with local governments, community and citizen's groups, conservation and land trust organizations, and private landowners to foster partnerships to enhance fish and wildlife habitat, with a high priority on projects which support recovery of endangered species and or benefit migratory birds.

- Since 2001, the Coastal program has been working, through over 300 partnership agreements, to *restore* nearly 45,000 acres of wetlands and native grasslands and over 300 miles of streamside habitat to their former healthy, functioning state. The Coastal Program has also assisted communities and non-government organizations to *protect* over 900,000 acres of wetland and native grasslands, and nearly 2,800 miles of stream and streamside habitat. So far, to further add to the success of the Coastal Program, nearly 57,000 acres have been planned for FY 04 and 05 for restoration and protection. Since 1994, the program has helped: protect over 1.1 million acres; restore over 113,000 acres; and restore over 900 miles of stream and riparian habitat.

- The National Coastal Wetlands Conservation Grant Program assists in acquiring, restoring, and enhancing coastal wetlands. Since its establishment in 1990, almost $152 million has been awarded to coastal States and the Territories for acquisition, protection and/or restoration of almost 189,000 acres of coastal wetland ecosystems.

- In Tampa Bay, the U.S. Geological Survey (USGS) is working with state, local, and academic partners to develop a Bay-wide integrated model to support policy and management aimed at habitat restoration and protection in balance with changing land and water use practices.

- In South Florida, San Francisco Bay, Chesapeake Bay and Puget Sound the USGS is engaged in multi-agency programs by providing hydrologic, geologic, geographic, and ecological information and models to inform long-term plans for restoring ecosystem functions, improving water supply reliability, and sustaining the quality of coastal waters.

- In Hawaii and South Florida, the USGS is supporting multi-disciplinary studies to assess the impact on declining coral resources of sediments and nutrients delivered from adjacent watersheds subject to changing land and water use.

- The USGS has undertaken a five-year study that: evaluates the effects on wetland plant communities of water-level regulation on Lake Ontario; develops predictive models for testing a variety of proposed new regulation plans; and helps develop an environmentally sensitive regulation plan.

- The USGS has used coastal sedimentology methods to produce a 4700-year record of past Great Lakes levels in order to interpret the interactions between climate change, lake levels, and wetland plant ecology.

- USGS scientists conduct research on the population dynamics of Great Lakes fishes to determine the consequences of natural and human-induced perturbations on Great Lakes fish communities and to aid development of responsive management strategies to ensure continued use and protection of Great Lakes fishery resources.

- In cooperation with numerous partners in the Great Lakes Basin, USGS scientists conduct restoration research on native Great Lakes species such as the American eel, Atlantic salmon, lake sturgeon, lake trout and native unionid mussels.

- The FWS Coastal Program is currently implementing the Habitat Information Tracking System (HabITS) data collection and management program that will facilitate the monitoring and assessment of field-generated habitat and project data. FWS works in close coordination with NOAA on this program.

- The Minerals Management Service (MMS) organized scientists from Federal, State, and local government agencies, universities, and private and volunteer organizations to form a Multi-Agency Rocky Intertidal Network (MARINe) to monitor important rocky intertidal (shoreline) resources in southern California. Long-term monitoring of shoreline resources provides the data needed to understand changes that may be associated with natural or human-induced activities.

Watersheds

- The Partners for Fish and Wildlife program is a voluntary, non-regulatory program that focuses on the restoration of wetlands and other important habitat. It also works closely with the various Department of Agriculture conservation programs. Since 2001, the Partners program – through approximately 9,000 landowner agreements – has helped to restore: 151,000 acres of wetlands; over 703,000 acres of native grasslands, prairie, and uplands; and nearly 2,400 miles of stream and streamside habitat. Projects in FY 04 and 05 will nearly double the success of the Partners program.

- Over the last 17 years, the Partners program has provided financial and technical assistance to more than 34,000 landowners to improve fish and wildlife habitats on their lands. Approximately half of these habitat restoration projects are in coastal states, including the Great Lakes region.

- The USGS continues to monitor water quality and to calculate loading of sediments in four of the Nation's largest rivers (Mississippi, Columbia, Colorado, Rio Grande). The USGS also began monitoring of the Yukon River to determine baselines and multi-decadal changes in the delivery of nutrients, mercury, natural and manmade organic chemicals, and trace elements from the Canadian border to the mouth of the river.

- USGS scientists have been instrumental in defining the importance of ground-water flow to the Great Lakes and in studying natural and anthropogenic factors that influence the quantity and quality of ground water at the Great Lakes coastline.

Ocean Leadership and Coordination

- The FWS Coastal Program specializes in coordinating and communicating with federal agencies and watershed groups in the field on projects to meet habitat conservation and restoration priorities.

- The FWS Fisheries Program engages in coordination of interagency activities impacting the Great Lakes, oceans, and coastal areas and resources. For example, the Service works closely with the Great Lakes Fishery Commission. The commission coordinates fisheries research, controls the invasive sea lamprey, and facilitates cooperative fishery management among the state, provincial, tribal, and federal management agencies in the Great Lakes region. The Service is a signatory to the Strategic Plan for Management of Great Lakes Fisheries, which provides mechanisms to coordinate management among the fisheries jurisdictions, and to link fisheries management with environmental management.

- The USGS is providing the geologic and hydrologic information required to understand regional sedimentary and hydrologic systems in Puget Sound, Southern California, San Francisco Bay, New England, Chesapeake Bay, the Mid-Atlantic, South Florida, Tampa Bay and the Central Gulf of Mexico. Integrated monitoring and understanding of physical and ecological change provide the basis for policy and management responses to natural and human-driven change.

- The MMS is undertaking a regional approach to managing OCS sand and gravel resources to facilitate planning and decision-making concerning the use of such resources for beach nourishment, coastal restoration, and wetlands protection projects. The prototype for this approach is the Louisiana Sand Management Working Group (LSMWG), which was established in 2003 to enable interested and affected parties to work together to resolve both short-term and long-term issues relating to the use of sand and gravel resources for coastal projects in Louisiana. Regional strategies will be undertaken as needed elsewhere based on the effectiveness of the LSMWG.

- MMS and USGS are charter members of the National Oceanographic Partnership Program (NOPP) and of the Joint Subcommittee on Oceans (JSO) established by the Committee on Environment and Natural Resources and Committee on Science of the National Science and

Technology Council. NOPP is a collaboration of fifteen Federal agencies to provide leadership and coordination of national oceanographic research and education programs and the JSO provides advice on national issues of ocean science and technology.

- Ongoing MMS research is gathering information in the Gulf of Mexico greatly expanding our knowledge of chemosynthetic communities, which use chemicals rather than light to produce food. Scientists funded through the MMS have studied these communities for 20 years and has developed procedures for the oil and gas industry protecting these communities.

- Several DOI agencies carry out their environmental activities utilizing an ecosystem approach. For example, many of the Fish and Wildlife Service's refuges in coastal areas emphasize ecosystem approaches and involve partners and local communities in developing management plans. FWS is also a member of the Estuary Habitat Restoration Council, a coordinating body which currently addresses ecosystem-based management. The National Park Service often emphasizes an ecosystem approach in coastal areas. USGS also emphasizes ecosystems both in the context of implementing its National Coastal Plan and through its Priority Ecosystem Program. The National Coastal Plan integrates across all USGS activities to meet science and information needs in coastal ecosystems. Similarly, the Priority Ecosystem Program establishes integrated science programs focusing on significant ecosystem-based conservation projects with partners.

<u>Integrated Ocean Observation System (IOOS)</u>

- The Department of the Interior is an active participant in the development of the IOOS through the charter memberships of the MMS and the USGS on the Executive Committee of Ocean.US, the national office for ocean observation. MMS has also engaged the OCS oil and gas industry on how best to support the IOOS and has finalized a Notice to Lessees and Operators (NTL) establishing an ocean current monitoring and data-sharing program in the Gulf of Mexico. Under the NTL, deepwater oil and gas platform operators will collect ocean current data from drilling and productions sites and publish it on a publicly accessible website.

- This ocean current monitoring program will ensure that platform operators have the necessary information to curtail operations before ocean currents build to threatening levels. The program will also enhance the design capabilities of deepwater production structures. These actions are consistent with the Oceans Commission's recommendation for partnering with the offshore oil and gas industry in the design, implementation, and operation of the IOOS in the areas where offshore oil and gas activities occur.

- MMS, in partnership with NOAA and under the auspices of the National Oceanographic Partnership Program, is conducting the study *Surface Circulation Radar Mapping in Alaska Coastal Waters: Field Study Beaufort Sea and Cook Inlet*. This effort is being conducted in cooperation with the Alaska Ocean Observing System (AOOS) and with the projected goals of the national IOOS.

- USGS observing assets, including hydrologic monitoring and geospatial information, are integral to meeting the broad objectives of the IOOS and efforts are ongoing to ensure that these critical data are integrated within the developing system and responsive to the needs of federal, academic, state, and non-governmental users.

Creating a National Strategy for Increasing Scientific Knowledge

- Many of the activities that MMS regulates, manages, and the research it supports, is in areas where little, if any, other activity has ever occurred and often using new technologies (i.e. exploration). For example, ongoing activities in the deep waters of the Gulf of Mexico are employing state-of-the-art-engineering and deep-sea oceanographic science to ensure safe and environmental sound activities.

- Almost at the same time that the NRC's report on *Ocean Exploration* (NRC 2003) was released, the MMS announced the initiation of the study *The Archaeological and Biological Analysis of World War II Shipwrecks in the Gulf of Mexico: A Pilot Study of the Artificial Reef Effect in Deep Water* to investigate the long-term effect of man-made structures on the deep-sea, and conversely, the effect of the environment on those structures. This ongoing MMS project was initiated with NOAA's Office of Ocean Exploration under the auspices of the National Oceanographic Partnership Program

- Recent surveys on the Gulf of Mexico continental slope demonstrated the existence of significant assemblages of the deep sea coral *Lophelia*s. The distribution and extent of these remarkable coral habitats is being investigated for the first time by MMS and USGS in the northern Gulf of Mexico.

- MMS conducts a substantial social and economic studies program and has an important role in collecting and distributing socioeconomic data on the ocean and coasts.

- MMS is developing a comprehensive marine cadastre. A marine cadastre describes the legal rights and responsibilities for marine "real estate" including the seabed, water column, and the sea surface and air above. In Circular A-16, OMB assigned this responsibility to MMS and encourages other federal agencies to collaborate, discuss, and resolve common issues.

Offshore Energy & Other Mineral Resources

- MMS manages the mineral resources on the Nation's Outer Continental Shelf (OCS) in an environmentally sound and safe manner; and collects, verifies, and distributes mineral revenues generated from Federal (onshore and offshore) and most Indian lands.

- MMS is responsible for comprehensive management of both the energy and nonenergy mineral resources of the OCS in accordance with the OCS Lands Act., as amended. The MMS role entails resource assessment, environmental study and assessment, conveyance of rights for fair market value, and ensuring safe and environmentally sound exploration and development operations.

- The President's National Energy Policy (NEP), issued in May 2001, presents recommendations to diversify and increase energy supplies, encourage conservation and ensure adequate energy distribution. One of the NEP challenges is to increase energy supplies while protecting the environment. The Federal OCS currently supplies 30 percent of all oil and 25 percent of all natural gas produced in the United States. New incentives to encourage energy companies to safely explore and develop difficult-to-reach areas of the Gulf of Mexico will help boost peak oil production in the gulf by 43 percent and natural gas production by 13 percent over the next decade. Oil production in the Gulf will increase to a

record 2 million barrels per day by 2006, compared to the current rate of 1.5 million barrels per day, and could reach 2.25 million barrels a day by 2011, according to MMS projections. The projected increase in oil production will provide enough additional energy to heat 3.5 million new homes.

- Increasingly, there is a need for renewable energy resources and for new ways to support offshore oil and gas activities. The Federal government is advocating increased use of renewable sources of energy and the private sector is considering non-traditional energy-related projects on the OCS (e.g. offshore wind farms, wave energy, and staging and medical facilities to support deep water oil and gas operations).

- Public awareness and support of renewable energy has increased dramatically, to the point where there has been an approximately 30% increase in renewable energy generation over the past decade. Renewable resources, such as wind and waves, occur naturally and abundantly offshore and will someday be a vital source of energy for the Nation. MMS's extensive experience in ocean minerals management continues to be an important source of information about the safe development of offshore resources in managing competing demands of infrastructure associated with these sources of energy.

- The Departments of Interior and Energy have worked collaboratively on renewable energy development. The MMS is a cooperating agency in discussions regarding wind and wave projects on the OCS, providing expertise on marine environmental and engineering issues as well as potential competing uses on the OCS.

- The USGS performs regional framework studies that define trends and other large-scale features while the MMS is responsible for specific mineral targets or deposits such as plays and individual structures or shoal fields and individual shoals. The USGS may also perform detailed mineral evaluation in state waters where a state is unable to perform such work.

- In support of its responsibilities relating to non-energy minerals, the MMS has developed policy direction and guidance for the marine mineral resources on the OCS. Efforts are currently focused on collecting and providing geologic and environmental information, developed through partnerships with coastal States, to identify and make available sand deposits in Federal waters suitable for beach nourishment and wetlands protection projects. Information collected in conjunction with these efforts assists the MMS in making future decisions relative to the possible leasing of these deposits. The MMS also has been conducting environmental studies related to non-energy minerals under its environmental studies program since section 20 of the OCS Lands Act was amended to broaden the scope of the studies program to include such minerals in addition to oil and gas. In addition, the MMS performs environmental assessments relating to the conveyance of OCS non-energy minerals in accordance with the National Environmental Policy Act.

- Methane hydrates are a significant potential source of energy for the Nation. The USGS mean estimate of methane hydrates is 200,000 trillion cubic feet. If just one percent of this resource becomes commercially available, it would double the amount of recoverable natural gas in the U.S.

- Methane hydrates on and beneath the OCS are regulated by the Outer Continental Lands Act and thus managed by the MMS. The MMS currently has a three pronged effort regarding methane hydrates focusing on (1) resource assessment and evaluation, (2) environmental

assessment, protection and monitoring, and (3) exploration and production activities, including offshore safety.

- The MMS expects that initial limited production from the Gulf of Mexico may commence within 10 years and is working with other agencies through the National Methane Hydrate Program to conduct research and development.

Coral Reefs & Other Coral Communities

- The National Parks have adopted new approaches to conserve America's coral reefs and enhance recreational fishing and diving opportunities. Biscayne National Park near Miami is developing a Fisheries Management Plan with the State of Florida that transcends jurisdictions and boundaries to sustain recreational fish stocks in and around the Park and Biscayne Bay. NPS has moved forward with regulations to protect the new Virgin Islands Coral Reef National Monument and the expanded Buck Island Reef National Monument. The new no-take marine reserves are expected to replenish fish and shellfish populations, protect fragile reefs from anchor damage, and provide recreational divers and snorkelers opportunities to experience coral reefs in a natural state.

- The Department of the Interior is the co-chair of the Coral Reef Task Force and is active in the areas of coral reef protection, conservation, and research. Executive Order 13089 established DOI and NOAA as co-chairs of the 19-member Task Force. The Department manages ten coral reef parks and the coral damage restoration and cost recovery program under the National Parks Resource Protection and Restoration Act. Additionally, since the early 1970's, DOI has supported a comprehensive, multidisciplinary study (including monitoring) of the East and West Flower Garden Banks in a petroleum-rich area of the Gulf of Mexico; is supporting ongoing research examining the patterns of coral community development and structure on OCS platforms as a function of distance and direction from other nearby platforms and the Flower Garden Banks; and has initiated surveys of significant assemblages of the deep sea coral *Lophelia* on the Gulf of Mexico continental slope.

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- The USGS supports integrated science studies to evaluate the impacts of watershed processes and associated sediment and contaminant delivery on coral reefs in Hawaii and South Florida. Remote sensing and in-situ monitoring and high-resolution mapping of shallow-water corals in Florida and the Virgin Islands are informing resource management and providing the basis for assessments of changes in coral ecosystem health.

- The Fish and Wildlife Service's National Wildlife Refuge System coral reef refuges alone protect almost 3 million acres of coral reef ecosystems. These habitats include hard coral reefs, tropical lagoon systems, living hardbottoms populated with sponges and soft corals, seagrass meadows, sand and mud flats, mangrove forests, and intertidal creeks. There are 39

coral reef refuges in tropical and subtropical waters in Florida, the Caribbean, Hawaii, and the Pacific Islands.

- The Fish and Wildlife Service recently teamed with the National Oceanic and Atmospheric Administration, the University of Miami, Florida State University and the John G. Shedd Aquarium on a research cruise to Navassa Island National Wildlife Refuge, which is an uninhabited 1,147-acre island approximately 35 miles west of Haiti. Ten biologists conducted more than 300 dives and gathered invaluable biological data on coral reef diseases and on the rich assemblage of fish, sponges, invertebrates and marine turtles. First-ever interviews with Haitian fishermen were conducted as was an extensive acoustic mapping study. Navassa Island National Wildlife Refuge was established to preserve the coral reef ecosystems and marine environment, enhance native wildlife and plants, including endemic reptiles and thousands of nesting seabirds, and provide opportunities for wildlife research.

Marine Mammals & Endangered Marine Species

- MMS conducts an annual survey of Bowhead whale migration in the Beaufort Sea to protect an endangered species and the traditional way of life for native Alaskans.

- MMS is working collaboratively with Office of Naval Research (ONR), NOAA, the Woods Hole Oceanographic Institution, Massachusetts Institute of Technology, Oregon State University and international experts to determine if offshore industry noise and marine seismic operations represent a threat to marine mammals and, if so, how to mitigate those effects.

- The MMS is also partnering through the National Oceanographic Partnership Program (NOPP) to support a number of nationally important research projects pertaining to marine mammals, including studies being conducted through the National Academy of Sciences.

- The Bureau of Reclamation's Technical Service Center is engaged in activities that involve the evaluation of human activities on marine endangered species. For example, the Fisheries Applications Research Group conducts studies and develops technologies for understanding and sustaining fish communities associated with Reclamation's water development facilities and operations.

- Extensive efforts are underway by the Marine Mammal Commission's Advisory Committee (of which FWS and MMS are members) on Acoustic Impacts on Marine Mammals, which was authorized by Congress, to determine what is known and not known about the biology of marine mammals as it relates to anthropogenic sound. A critical function of the Advisory Committee is to identify research needs, and make recommendations on how to address those needs.

Invasive Species

- Various aquatic invasive species management programs exist at national wildlife refuge field stations. There programs incorporate many working partnerships with other federal agencies, NGOs, Refuge Friends Groups, local businesses, schools and private citizens to combat invasive species. Management focus is directed toward invasive non-native plants that have

been become established in the intertidal zone and estuarine areas, and other introductions such non-native shellfish, crustaceans, algae and fish.

- The Department of the Interior sponsors a broad program of research in marine and coastal environments which provides information on the detection and distribution of invasive species in the marine environment. Some DOI-sponsored efforts involve the collection and identification of many thousands of invertebrate and fish specimens. These collections, with their associated geographic distribution database, provide an important resource for the determination of impacts caused by any future introduction of invasive species in U.S. marine and coastal waters. The close coordination of the DOI Invasive Species Committee with the National Oceanic and Atmospheric Administration and the U.S. Coast Guard ensures optimal use of DOI information on marine ecosystems relevant to invasive species issues.

- The USGS has a national Invasive Species Program to coordinate and guide its invasive species research efforts. The USGS conducts cooperative efforts to address invasions through ballast water discharge with a number of partners. These research activities focus on design and testing of ballast water treatment technology and development of experimental protocols and analysis techniques.

- The USGS research supports cooperative efforts in the Great Lakes region to prevent and control the spread of invasive fish, such as the round goby and sea lamprey; reduce the pervasive impacts of zebra mussels on U.S. waterways; and manage the adverse ecological and economic impacts of the invaders.

- In Hawaii, the USGS is conducting research on the impact of alien animals and plants that promote the erosion processes and the delivery of sediment to adjacent coral reef systems.

- USGS investigations have documented the arrival and explosive spread of an invasive foraminifera that now dominates foram assemblages in San Francisco Bay and has spread up and down the West coast of the United States.

- USGS and NOAA collaborative studies have identified the largest U.S. outbreak of a European invasive colonial tunicate species that now infests at least 40 square miles of gravel habitat on Georges Bank, a major fishing ground for scallops and groundfish; ongoing studies are addressing the geological and oceanographic requirements of this aggressive species to assess its impact on the fishery and predict its further spread.

Vessel Pollution & Improving Safety

- Federal funding for pumpout stations comes from the Clean Vessel Act through the Fish and Wildlife Service's Federal Aid in Sport Fish Restoration program. Since its inception, the Service has provided over $87 million to 44 States, 4 territories and D.C. for 3,700 pumpout stations and 2,000 dump stations.

Coastal Water Pollution

- MMS' regulatory program prevents accidents and pollution on the Federal Outer Continental Shelf (OCS). The MMS continually seeks operational improvements that will reduce the

risks to offshore personnel and to the environment. The Department constantly re-evaluates its procedures and regulations to stay abreast of technological advances that will ensure safe and clean operations, as well as to increase awareness of their importance. On the OCS, there are more than 42,000 workers directly employed in offshore operations. The infrastructure includes approximately 4,000 oil and gas production facilities and approximately 35,000 miles of pipeline.

- The USGS is working with other federal agencies to integrate USGS hydrologic monitoring networks in the development of the Integrated Ocean Observing System.

- In Hawaii, the USGS is studying the impacts of pesticides on aquatic fauna and coral reefs that receive stream waters.

- The USGS develops regional hydrologic and contaminant transport models, constrained and validated by comprehensive monitoring networks, which allow managers to accurately assess the efficacy of management and policy alternatives. USGS programs range in scale from the Mississippi Basin impacts of land use practices on Gulf of Mexico Hypoxia to the influence of local land-use practices on fragile coral resources in Hawaii, Florida and the Carribbean.

- The FWS Coastal Program routinely coordinates with USDA's Natural Resources Conservation Service, EPA, and NOAA on projects that reduce nonpoint source pollution, soil erosion, and other detriments to coastal water quality.

- The National Park Service has initiated assessments of coastal water resources in 22 coastal parks. This information will be used to address nonpoint pollution and other coastal water quality issues, and to develop cooperative management strategies for watersheds that influence coastal Parks, working in partnership with EPA, NOAA, state and local agencies, landowners and public/private watershed councils.

Marine Commerce & Transportation

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Sediments

- Federal offshore sand resources are being used for shore protection projects. Under the auspices of the OCS Lands Act in conjunction with State partners, the MMS has conveyed millions of cubic yards of OCS sand for shore protection projects. This process includes the identifying and authorizing access to sand deposits suitable for beach nourishment and wetlands protection projects; conducting the appropriate environmental studies; and determining OCS sand/lease permit requirements, conditions, and other stipulations that protect the environment.

- Through the National Ocean Partnership Program (NOPP), the USGS and other partners have supported federal and academic efforts to develop and release a community model of coastal circulation and sediment transport for public use.

- The USGS has completed an assessment of shoreline change for the sandy shorelines of the Gulf of Mexico that provides a consistent assessment of shoreline change over the past 100 years.

- The USGS has provided regional geologic information on coastal areas in Long Island, NY, North Carolina, South Carolina, and Louisiana that facilitates state and federal assessment of sand resources.

- National Parks on the coasts are participating in regional sediment management programs. For example:

    Cape Hatteras National Seashore is a member of the interagency Outer Banks Task Force, which is examining long-term transportation alternatives for the Outer Banks, a process which necessarily must address barrier island ecosystem issues.

    Golden Gate National Recreation Area is a member of the interagency Ocean Beach Task Force, which is examining long-term infrastructure and shoreline preservation alternatives for this section of the California coast.

    Fire Island National Seashore is participating in the New York-area Regional Sediment Management "Reformulation" plan and will use results of this cooperative planning process to define coastal management alternatives.

- National Parks on the coasts are participating in regional sediment management programs. For example, Cape Hatteras National Seashore is a member of the interagency Outer Banks Task Force, which is examining long-term transportation alternatives for the Outer Banks, a process which necessarily must address barrier island ecosystem issues. Golden Gate National Recreation Area is a member of the interagency Ocean Beach Task Force, which is examining long-term infrastructure and shoreline preservation alternatives for this section of the California coast. Fire Island National Seashore is participating in the New York-area Regional Sediment Management "Reformulation" plan and will use results of this cooperative planning process to define coastal management alternatives. Golden Gate National Recreation Area hosted a San Francisco Bay area meeting for California Coastal Sediment Management planning on May 4, 2004.

- The USGS is actively engaged in the US. Army Corps-led National Shoreline Management Study and is, as a result of its National Assessment of Shoreline Change Hazards, providing the only consistent national information on "where, and to what extent U.S. shorelines erode or accrete." USGS regional studies provide the system- and regional-scale understanding of sedimentary systems that is essential to managing sediment effectively across the landscape including marine systems. USGS-led efforts to model coastal evolution and sediment transport provide the essential tools for describing and forecasting shoreline and geologic change necessary to evaluate the immediate and long-term impacts of human alterations to sedimentary systems.

Ocean Education

- With more than 5,000 miles of beaches, coral reefs, kelp forests, glaciers, and other coastal resources, the National Parks are perfect outdoor laboratories for the study of ocean science and coastal processes. The NPS Research Learning Centers attract top scholars in the marine sciences by providing facilities and logistical support, and teachers, students and volunteers with hands-on learning opportunities. Ground-breaking, public-private partnerships have yielded important gains in science such as the Tomales Bay Biodiversity Inventory at the Pacific Coastal Learning Center at Point Reyes National Seashore. Other RLCs include the Alaska Science Center/Kenai Fjords National Park (AK), Gateway National Recreation Area (NJ-NY), Cape Cod National Seashore (MA), Acadia National Park (ME), and Indiana Dunes National Seashore (IN – Lake Michigan).

- The National Ocean Research Leadership Council, the governing body of the National Oceanographic Partnership Program, has sponsored an inventory of educational programs and projects funded by member agencies. The MMS participated in this survey which then led to the development of the paper *A Regulatory Agency's Role in Marine Education: Current and Future Resources* describing MMS' marine education program.

- MMS publishes a bi-monthly journal, *MMS Ocean Science*, which includes materials pertaining to new ocean technology, oil and gas development projects, archaeology, biology, physical oceanography, oil spill prevention, sociology, economics, and safety issues.

- The ongoing MMS *Coastal Marine Institute* (*CMI*) initiative was established in 1991 as an MMS-State partnership to strengthen relationships with coastal states where OCS oil and gas activities take place, and to improve the information flow to the affected States and the public. It accomplishes this by using highly qualified researchers at State institutions of higher education to conduct research on issues of mutual concern to both the State and MMS. This research is focused on environmental and socioeconomic aspects of OCS oil and gas and marine mineral development activities. Through the CMI's, increasing numbers of students and faculty are engaging in OCS related research, developing new skills, and developing new information and approaches to solving management issues.

- MMS oceanographic studies have led to the discovery of new species of marine life that now resides in the MMS Collection at the Smithsonian's Natural History Museum. MMS scientists send marine organisms ranging from tiny shrimp to fist-sized mollusks to the museum for storage. Gathered by grab samplers, bottom trawl nets, remotely operated vehicles, or manually by SCUBA divers, organisms are identified or described (new species) and made available to students and researchers around the world through a new online library at the Smithsonian.

- MMS annually sponsors the National Energy Education Development (NEED) Project, a national K-12 energy education program dedicated to promoting an understanding of the scientific, economic and environmental impacts of energy. NEED teaches the scientific concepts of energy and provides objective information about energy sources - their use and impact on the environment, the economy and society.

Ocean Data and Information Systems

- The Department of the Interior has significant expertise in the collection and management of ocean-related data. For example, MMS has generated a large quantity of oceanographic data through its Environmental Studies Program (ESP). Since the inception of the ESP, over $600 million of research has been contributed to the National Oceanographic Data Center. MMS also has over 1,700,000 line miles of 2-D seismic information and 3-D information covering over 39,000 OCS blocks. MMS also has an M.O.U. with the National Geophysical Data Center regarding data release.

- The USGS develops, maintains, and delivers scientific information related to the resource and hazard potential of coastal and marine regions. For example, the USGS provides satellite and other remote sensing data, geologic data and interpretations for the characterization of coastal and marine habitats; for the assessment of coastal change, offshore earthquake, and tsunami hazards; for the evaluation of offshore mineral resource potential and the environmental impacts of marine resource use. USGS hydrology, geology, biology, and geography programs provide the environmental information needed to assess and manage the impacts on coastal waters of watershed development and land-use practices.

Oceans and Human Health

- USGS studies in the Great Lakes, Florida, Hawaii and California have addressed: the introduction, transport, and potential impacts of human-specific wastewater associated viruses and bacteria on coastal waters where they may result in beach closures and fishery advisories and closures; have begun to examine the effects of pharmaceuticals and endocrine disruptors as they are released into the marine system; and are examining coral and sea turtle health as it relates to human health and pathogen pollution. USGS studies of coastal circulation and contaminant transport and concentration have contributed to the development of the Boston Harbor Clean-up Program which has resulted in substantial improvement in the environmental condition of the region and to federal efforts to mitigate the effects of offshore contaminant disposal sites in Southern California. The USGS investigates the pathways through which mercury form historical gold mining in California enters surface water systems and accumulates in sediment and biota throughout San Francisco Bay and adjacent watersheds.

Marine Debris

- Individual National Wildlife Refuges located from above the Arctic Circle to below the Equator have programs for underwater, coastal, and near-shore cleanups, large debris removal, and habitat restoration in an attempt to reduce, minimize, or eliminate threats and risks to fish and wildlife imposed by various forms of marine litter.

- The FWS is a key partner in the Waterbird Conservation for the Americas initiative. The known risks to seabirds and other waterbirds associated with marine debris ingestion and entanglement are identified through the Initiative's *North American Waterbird Conservation Plan*. The FWS also has a Waterbird Bycatch Reduction Plan of Action promoting recycling of fishing gear, not disposing of plastic debris (including gear), and the use of degradable plastic in fishing equipment.

- The Interagency Seabird Working Group, co-chaired by FWS and NOAA, is working on bird bycatch reduction through elimination of marine debris. The Service is actively involved with all Fishery Management Councils and Marine Fisheries Commissions, our Migratory Bird Treaty partners (Canada, Mexico, Japan and Russia) and with non-treaty nations, including through the U.N.'s Food and Agriculture Organization, to address marine entanglement, bird bycatch, and related issues.

- Every year, thousands of Park volunteers participate in the *International Coastal Cleanup (ICC)* and provide the resources to remove marine trash and debris on National Park shorelines.

- The MMS requires the offshore oil and gas industry to complete marine trash and debris awareness training, record-keeping, and certification requirements for all offshore personnel. The offshore oil and gas industry's adherence to the laws and procedures have greatly reduced their share of the trash and debris that is jettisoned into the Gulf of Mexico. However, there is still concern about the accidental loss of items from platforms and support vessels. The MMS is studying the sources and magnitude of the contribution of OCS activity to the marine trash and debris problem.

- MMS is working cooperatively with the offshore industry to better quantify OCS-related trash and debris that accumulates on Padre Island National Seashore, and assess the change in quantity and types of trash and debris since a previous investigation (March 1994 to September 1995). This new effort is scheduled to begin during 2005 and will (1) quantify the trash and debris on the beach attributable to OCS activities; (2) compare the results with the previous study (the methods and items surveyed must be the same); (3) present the oil and gas industry with a realistic estimate of its contribution to trash and debris in the Gulf of Mexico; and (4) identify specific trash and debris items that pose a chronic problem for the oil and gas industry so that a waste management plan can be developed to address the problem.

- The USGS is conducting studies to establish the mechanisms by which debris kills marine organisms, the impacts on marine populations, and the requirements for effective mitigation.

<u>Natural Hazards</u>

- The Department of the Interior has experience in collecting, monitoring, and analyzing information; and provides scientific understanding about natural resource conditions, issues, and problems and their susceptability to natural hazards and human impacts. For example, the MMS is a world leader regarding the safety of facilities placed on the Outer Continental Shelf. With a permanent workforce inspecting offshore facilities and with expertise in the engineering, structural, and environmental issues related to building fixed offshore facilities, the MMS' expertise is sought out worldwide.

- In Southern California, the USGS is providing three-dimensional geologic characterization and modeling of onshore and offshore geologic structures to better understand earthquake hazards. The USGS also is developing models of regional ground-water flow and chemical transport to better understand ground-water availability.

- USGS geologic investigations have identified several massive landslide deposits off Southern California and previously unknown faults. USGS is working to assess the associated earthquake and tsunami hazards represented by these features.

- USGS research and monitoring efforts are improving our understanding of the vulnerability of coastal resources and communities to extreme storm events.

- USGS has a strong research program that directly supports the FEMA/USACE mandate. Hazard mitigation strategy needs to be based upon science and disaster management policy is only as good as the science behind it. USGS provides science for hazard mitigation and disaster management.

- The USGS, with responsibilities for earthquake, volcano, tsunami, landslide and flood hazards is a leader in federal efforts to provide the science and information base for hazard reduction. The hazard assessment and forecasting programs of the USGS provide a substantial science base for developing comprehensive multi-hazard assessments. Both the applied products and research pursuits of USGS hazards programs are substantially dependent on broad USGS mapping and monitoring capabilities.